

Claims

- [c1] 1. A diesel engine having at least one bank of cylinders with at least one inlet valve and at least one exhaust valve per cylinder, comprising:
a first camshaft for the inlet valve, said first camshaft controlling the opening of the inlet valve; and
a second camshaft for the inlet valve, said second camshaft controlling the closing time of the inlet valve; and
a camshaft phasing mechanism coupled to said second camshaft.
- [c2] 2. The diesel engine of claim 1 wherein said camshaft phasing mechanism is capable of delaying the closing time of said inlet valve up to 60 crank angle degrees.
- [c3] 3. The diesel engine of claim 1 wherein said first and second camshafts are parallel to and adjacent to each other.
- [c4] 4. The diesel engine of claim 3, further comprising:
a first drive coupled to said first camshaft; and
a second drive coupled to said second camshaft wherein said first and second drives are arranged at opposite ends of said parallel camshafts.
- [c5] 5. The diesel engine of claim 1, further comprising an engine timing unit coupled to said camshaft phasing mechanism.
- [c6] 6. The diesel engine of claim 5 wherein closing time of said inlet valve is controlled by said engine timing unit controlling said camshaft phasing mechanism.
- [c7] 7. The diesel engine of claim 6 wherein said closing time of said inlet valve is adjusted based on an engine speed.
- [c8] 8. The diesel engine of claim 6 wherein said closing time of said inlet valve is adjusted based on an engine torque.
- [c9] 9. The diesel engine of claim 1, further comprising: a turbocharger coupled the engine.

- [c10] 10. The diesel engine of claim 9 wherein said closing time of said inlet valve is adjusted based on a charging pressure of said turbocharger.
- [c11] 11. The diesel engine of claim 1 wherein the first camshaft controls opening and closing times of the exhaust valve.
- [c12] 12. The diesel engine of claim 1, further comprising a third camshaft for the exhaust valve, said third camshaft controlling an opening and closing time of the exhaust valve.
- [c13] 13. A method for controlling valve timing in a diesel engine, the engine having at least one cylinder and at least one inlet valve and at least one exhaust valve per cylinder, the engine also having a first camshaft for controlling the opening of the inlet valve and a second camshaft for controlling the closing of the inlet valve, the method comprising: adjusting closing time of the inlet valve based on an engine speed wherein said adjustment is effected by a camshaft phaser coupled to the second camshaft.
- [c14] 14. The method of claim 13, further comprising: adjusting closing time of the inlet valve based on an engine torque.
- [c15] 15. The method of claim 13 wherein the engine has a turbocharger coupled thereto, the method further comprising adjusting closing time of the inlet valve based on a charging pressure of said turbocharger.
- [c16] 16. The method of claim 13 wherein the camshaft phasing mechanism is capable of delaying the closing time of said inlet valve up to 60 crank angle degrees.